

# **TRAINING OUTLINE**


**for**

**BAC DATAMASTER**

**INFRARED BREATH TEST INSTRUMENT**

**BASIC OPERATOR**

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By 

Barry K. Logan, Ph.D.  
Washington State Toxicologist

Prepared By

Washington State Patrol Breath Test Section

## **LESSON PLAN**

### **BASIC COURSE FOR DATAMASTER AND PBT OPERATOR**

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Prepared by Washington State Patrol  
Breath Test Section

To be presented in 12 to 16 hours.

#### **INSTRUCTIONAL OBJECTIVES:**

1. Understand the role of breath testing in DUI enforcement.
2. Understand basic pharmacology and physiology of ethanol relevant to DUI enforcement.
3. Understand the legal aspects of evidentiary breath testing.
4. Understand the principles of operation of the DataMaster.
5. Understand the purpose, principles, and operation of the simulator.
6. To develop the student's skill in operating the DataMaster.
7. To acquaint the student with techniques that help to achieve an admissible test result.
8. Basic preparation in court testimony regarding the DataMaster.
9. To provide an opportunity for hands on practice with the DataMaster.
10. To test the students knowledge of DataMaster procedures and ability to conduct an admissible breath alcohol test.
11. The student will become familiar with the history, nomenclature, theory, legal aspects and become a certified operator of the AlcoSensor III (PBT) instrument.
12. Successfully complete a written examination.

### TRAINING AIDS:

1. White/Black board
2. DataMaster instruments with simulators
3. Data Entry Code books
4. Operator Manuals
5. Breath test forms/documents
6. Blood vial kit and gloves
7. Practical exercise training forms
8. Alco-Sensor (PBT) with mouthpieces

### EXAMINATION:

1. Written exam - 80%.
2. Practical exercise - Pass/Fail

### PRE - INSTRUCTION:

1. Have a class roster filled out.
2. The Operator's Manual is a reference guide, neither the course nor the exam are based on the book.
3. This outline covers the DataMaster instruments and the Alco-Sensor III (PBT).
4. This is a 12 to 16 hour course that includes physiology of alcohol, legal aspects, principles of DataMaster operation, practical operation, as well as the operation and legal aspects of the PBT.
7. Successful completion of the course will qualify the student to administer evidentiary DataMaster tests and to use the PBT for 3 years.

## I. INTRODUCTION

- A. Driving by alcohol impaired persons has been a traffic safety concern since the invention of the automobile.
- B. It quickly became apparent that various effects of alcohol on humans can also be caused by other physical and mental conditions.
- C. Corroborative evidence of alcohol use is needed for court.
  - 1. Chemical tests
    - a. Urine tests were used in Scandinavia early in the century
      - (1) Later research has cast doubt upon the reliability of urine tests as a measure of alcohol concentration in the body
      - (2) Urine is **not** an acceptable sample for evidentiary alcohol concentration analysis in Washington.
    - b. Blood tests are accepted as a way of obtaining evidence of alcohol concentration in Washington.
      - (1) Blood samples can be taken under specific conditions
      - (2) The results of blood test are not available immediately
      - (3) Sample collection is intrusive
      - (4) Sample collection requires advanced training and skill
    - c. Breath testing is the preferred and accepted method of testing for alcohol since it is readily adaptable to field use.
      - (1) The results are immediately available
      - (2) Sample taking is not intrusive
      - (3) Test instruments are suitable for field use
      - (4) Breath is at least as good an indicator of impairment as venous blood

- D. Research has shown a direct relationship between breath alcohol concentration and impairment
1. Testing at intervals over a long period of time can be done more easily with breath, therefore, most impairment studies use breath testing to measure the alcohol concentration
  2. Field studies with large numbers of subjects use breath testing, therefore the impairments we recognize actually relate to breath alcohol even though in the past test results may have been reported as blood alcohol.
    - a. Borkenstein's Grand Rapids study (1963)
      - (1) There is an increased chance that persons with a 0.04g/210L or higher breath alcohol will be involved in a collision
      - (2) The probability doubles at a 0.06g/210L and is six times higher at 0.10g/210L
      - (3) Collisions by people at 0.08g/210L and higher, tend to be more one-car, expensive, serious injury collisions.
    - b. The National Safety Council's Committee on Alcohol and Other Drugs published a finding that all persons, regardless of drinking experience, are effected to a measurable degree at 0.08g/210L or more
- E. The value of breath test evidence depends upon the weight assigned to it by the law, the courts, and the circumstances of the case
1. Evidentiary breath test instruments have features that reduce uncertainties and provide reliable confident results
    - a. Using computerized instrumentation to measure breath alcohol samples allows the test process to be automated
      - (1) Minimizes the need for operator involvement in the analysis procedure
      - (2) Minimizes operator bias
      - (3) Ensures adherence to the protocol, the computer always performs the test the same way

- (4) It makes automatic safeguards possible for conditions that could be missed by humans

F. The DataMaster is the only breath test instrument approved for evidentiary use in the state of Washington

1. The DataMaster is a state of the art forensic breath test instrument that uses infrared spectroscopy to analyze a sample of human breath for ethanol concentration
2. It uses infrared light to analyze samples
3. It is self certifying
4. The test procedure is controlled by a central processing unit
5. It provides a printed evidence document showing test results
6. It expresses the results as grams of alcohol per 210 Liters of breath
7. The test procedure has built in safeguards to reduce uncertainty. The instrument can detect numerous problems and abort the test. It is designed to give a proper test or none at all.
8. It is approved for evidentiary use by the National Highway Transportation Safety Administration and is on the Conforming Products List.
9. DataMasters are in use in several jurisdictions.
  - a. U.S., Canada, Europe.

## II. PHYSIOLOGY OF ALCOHOL

A. There are many types of alcohol

1. Ethyl alcohol or grain alcohol
  - a. Used in alcoholic beverages
2. Methyl alcohol or wood alcohol
  - a. Very poisonous, turns into formic acid
  - b. Damages the optic nerve

3. Isopropyl alcohol or rubbing alcohol
    - a. Turns into acetone if consumed, stays with you a long time
  4. Other alcohols or volatile organic compounds on the breath
    - a. Poisonous
    - b. Concentration too low for DataMaster detection
- B. Ethyl Alcohol
1. Mixes readily with water
    - a. Will be distributed in all of the body water
      - (1) Blood
      - (2) Brain
  2. Ethyl alcohol in the brain is what causes impairment
  3. Alcohol usually gets into the body by oral consumption
    - a. You cannot become impaired by absorbing alcohol through your skin
    - b. You cannot become impaired by breathing in alcohol
  4. Once consumed, alcohol enters the gastrointestinal tract
    - a. The stomach is not an efficient absorber, may absorb up to 20%
    - b. The small intestine is an excellent absorber, 80% or more
    - c. Stomach contents will effect the rate of absorption
      - (1) By inhibiting absorption through the stomach walls
      - (2) By slowing passage from the stomach to small intestine
    - d. Ethyl alcohol is not changed chemically before being absorbed

5. Once absorbed, alcohol enters the circulatory system
- a. From the intestines it goes to the liver via the hepatic vein
    - (1) Some begins to be metabolized
    - (2) Most continues past the liver to the heart and then to the lungs.
  - b. In the lungs some of the alcohol enters the breath in accordance with Henry's Law
  - c. From the lungs the alcohol is carried to the heart and then into the arterial system
    - (1) Arteries carry the alcohol directly to the brain, where it causes impairment
    - (2) The arterial system carries the alcohol to all parts of the body, the distribution phase
    - (3) Blood carries alcohol into the capillary system
    - (4) The alcohol equilibrates with any water that it encounters
  - d. Blood carries the alcohol into the venous system and is carried back to the liver for more metabolizing
    - (1) Some of the alcohol is metabolized
    - (2) Most of the alcohol continues to the heart to repeat the cycle
  - e. When alcohol is being absorbed more quickly than it is being metabolized (burned off) its concentration in the blood increases.
    - (1) Generalization: A 235 lb. man will metabolize an average of one 12 fl.oz. beer per hour. Where as a 145 lb. women will metabolize an average of one-half of a 12 fl.oz. beer per hour. This assumes beer to be 4% alcohol by volume.
  - f. As concentration increases, the impaired effects from the alcohol become more obvious



- (1) The first effects are subtle
  - (a) Inhibitions fade
  - (b) Suppression of care
  - (c) Reduced ability to recognize hazards
  - (d) Inappropriate response to hazards
- (2) Loss of efficiency in simple performance tests
- (3) Horizontal Gaze Nystagmus
- (4) Readily observed effects
  - (a) Lack of coordination
  - (b) Loss of balance
  - (c) Emotional instability
- (5) At high concentrations unconsciousness and respiratory paralysis can occur
- (6) Untreated respiratory paralysis results in death
- g. The onset and magnitude of the various effects differ among individuals
  - (1) Native tolerance
  - (2) Use or consumption tolerance
- h. Because of differences in absorption, elimination and onset of various levels of effect, information about a defendant's actions in the hours prior to a DUI violation can be important evidence
- i. There is no known way to increase the rate of elimination of alcohol from the human body
- j. There is no known way to prevent the effects of alcohol

### III. LEGAL ASPECTS

#### A. DUI Statute (RCW 46.61.502)

1. A person is guilty of driving while under the influence of intoxicating liquor or any drug if the person drives a vehicle within this state
  - a. And the person has, within two hours after driving, an alcohol concentration of 0.08 or higher as shown by analysis of the person's breath or blood made under RCW 46.61.506 or
  - b. While the person is under the influence of or affected by intoxicating liquor or any drug or
  - c. While the person is under the combined influence of or affected by intoxicating liquor and any drug
2. Constitutionally affirmed by State v. Brayman. (breath per se law)
3. 46.04.670 defines vehicle
4. State v. Day - public access
5. 46.04.015 defines alcohol concentration as
  - a. g/210L breath
  - b. g/100ml blood

#### B. Physical Control Statute (RCW 46.61.504)

1. Applies wherever DUI applies
2. "Safely off the roadway" exception
  - a. Edmonds v. Ostby said it is a factual issue to be decided by the trier of fact

#### C. Driving Or In Physical Control After Consuming Alcohol RCW 46.61.503

1. Person guilty of driving or in physical control of a motor vehicle after consuming alcohol if the person operates a motor vehicle within Washington and

- a. Is under twenty-one years of age
  - b. Within 2 hours of driving is between a .020 and .079
  - c. A test over 2 hours may be used to show person was between a .020 and a .079 within the 2 hours of driving
- 2. Arrest for "Driving After Consuming" (0.02 minor law)
- 3. Test on the DataMaster for evidence
- 4. A misdemeanor
  - a. **Wording on citation: "Minor driving after consuming alcohol"**
- D. Uniform Commercial Drivers Act (RCW 46.25.110)
  - 1. Violation of the Act, mandatory, gross misdemeanor
  - 2. Any person who drives, operates, or is in physical control cannot have any alcohol in their system
    - a. Out of service for 24 hours, per CFR 392.5
    - b. If .040 or more, or refuse the test, their CDL will be disqualified
- E. Evidentiary Breath/Blood Test (RCW 46.61.506)
  - 1. A reading less than 0.080 may be considered with other evidence for determining if under the influence
  - 2. Breath based upon g/210L
  - 3. Testing methods approved by the State Toxicologist
  - 4. Blood test for alcohol or drug content
  - 5. Person has a right to additional test
- F. Implied Consent (RCW 46.20.308)
  - 1. Any person who operates a motor vehicle in the state of Washington is deemed to have given consent to test breath/blood for alcohol concentration or the presence of any drug

2. Applies wherever DUI applies
3. Elements
  - a. Driving or Physical Control of a motor vehicle within state of Washington. (RCW 46.04.320 - motor vehicle, but not trains)
  - b. Probable cause that subject is under the influence of alcohol or any drug, or has alcohol in his/her system in a concentration of 0.020 to a .079 and was under the age of 21
  - c. Lawful arrest
  - d. Implied consent warning read
    - (1) License, permit, or privilege to drive will be revoked or denied if refuse to submit
    - (2) License, permit, or privilege to drive will be revoked or denied if
      - (a) 0.080 or more and age 21 or over OR
      - (b) 0.020 or more and under age 21
    - (3) A bright line on refusals (DOL v. Lax, 1995). Once refused, no further testing by the officer needs to be done. The officer determines if a good faith attempt to provide a sample was made or if it is a refusal
      - (a) condensation in the mouthpiece, buzzing sound, and 'Please Blow' stops flashing. If in doubt about the sample acceptance of an instrument the officer can run a TEST with his breath to check it. Include the ticket with your case report.
    - (4) Reading implied consent warnings three times is sufficient
    - (5) Must be read in a language person understands
    - (6) DOL requests that place/city etc. be spelled out clearly

- e. If a breath test is 0.080 or more (adult) or 0.020 or more (minor) **or** the person refuses the test, the officer shall do the following. The results of both breath samples must exceed the limit.
  - (1) Serve the 'Driver's Hearing Request Information' notice of DOL intent to revoke or deny the persons driver's license.
    - (a) The person has 30 days to request the hearing with a \$100.00 fee. Not necessary to read form to subject. Simply complete top two lines and the date on the bottom.
    - (b) The person detaches the bottom of the notice and keeps it with their driver's license
    - (c) Do not give bottom portion to a revoked, suspended or any unlicensed driver
  - (2) Mark driver's license
    - (a) Use the diamond punch by the DataMaster and punch the green rectangle at the top of the license where 'Driver's License' is printed
    - (b) The marked license is now a temporary and is valid for 60 days from arrest date.
    - (c) DOL will handle if blood was taken.
    - (d) Temporary is not valid longer than the license it replaces
  - (3) Submit to DOL in 72 hours the 'Report of Breath/Blood Test' or the 'Report of Refusal to Submit to Breath/Blood Test'
    - (a) Page 3 of the DUI Packet
    - (b) For a blood test, submit the form when results are returned to you.
- f. After the Implied Consent Warning read
  - (1) Subject refused or
  - (2) had results of .080 or more and 21 or over or

(3) .020 or more under age 21 or

(4) .040 or more for commercial motor vehicle driver

G. Implied Consent for Commercial Motor Vehicle (46.25.110)

1. All out of service for 24 hours
2. 0.040 or more submit the Report of Breath/Blood Test to DOL within 72 hours
3. If a refusal, submit Report of Refusal to Submit to Breath/Blood Test to DOL within 72 hours
4. Go through the complete Implied Consent Breath or Blood plus the gray outlined part 'for commercial driver's only'
  - a. Marking of boxes in Implied Consent
    - (1) If Commercial Driver and DUI mark boxes in both sections of form, relating to DUI and Commercial Vehicle

H. DOL Administrative Hearings

1. Civil hearing
2. Held in county of arrest
3. To be from the officer's arrest report so his/her attendance is not needed, (exception is, the commercial driver where your will be required to attend). DOL will request your report if needed. Send it immediately when requested
4. Hearing within 60 days of the arrest (or issuance of notice by DOL if blood).
  - a. The time frame is very short between when DOL requests the report and the hearing date.
5. A preponderance of the evidence. Officer's DUI arrest report under declaration and any other evidence accompanying the report shall be admissible without further foundation. Certifications authorized by criminal rules shall be admissible without further foundation
6. No prosecutor except in Superior Court, will have Deputy Attorney General

7. Hearing Officer may issue subpoenas for attendance. If you want to attend it is okay with DOL if you notify them in advance.
8. DOL Hearings format: Include the following in the your arrest report
  - a. Adult
    - (1) Officer had reasonable grounds to believe the person had been driving or in actual physical control of a motor vehicle within this State
    - (2) There was probable cause the person was under the influence of intoxicating liquor or any drug
    - (3) Person was under lawful arrest
    - (4) The Implied Consent Warning was read to the person
    - (5) The person refused to submit to the test required or
    - (6) If tested, consent was given or the person was tested without consent as permitted (special evidence warning); plus the person's breath/blood was 0.080 or more within two hours
  - b. Minor, under age 21
    - (1) Officer had reasonable grounds to believe the person had been driving or in physical control of a motor vehicle within this State
    - (2) There was probable cause the minor had alcohol in his/her system in a concentration of 0.020 or more and was under the age of 21
    - (3) Minor was under lawful arrest
    - (4) The Implied Consent Warning was read to the person
    - (5) The minor refused to submit to the test required, or if tested, consent was given or the person was tested without consent as permitted (special evidence warning); plus the person was under the age of 21 with a 0.020 or more within two hours
  - c. Commercial Motor Vehicle Driver

- (1) The officer had reasonable grounds to believe the person had been driving or was in actual physical control of a commercial motor vehicle within this state while having alcohol in the their system
  - (2) The driver was lawfully arrested
  - (3) Commercial Implied Consent read
  - (4) The driver refused or had a reading of 0.040 or more
- 9. You can send another officer's report for the record containing PC about your case prior to the to help with your probable cause
- 10. DOL requests that if you run a breath test for another officer, you only run the test, let the arresting officer complete all the forms
- 11. Send a copy of your DataMaster ticket, operator certification along with arrest report to DOL if they request your reports

#### I. Case Law

- 1. The subject has a right to an attorney before the implied consent test (State v Wakenight)
- 2. Right to have attorney actually present within 30 minutes (State v Fitzsimmons)
- 3. The subject has a right to a private conversation if they or their attorney request it. (State v Koch)
  - a. Do not jeopardize officer safety
  - b. Need not interrupt 15 minute observation however it probably will, so start 15 minutes over
- 4. If the subject is to be detained and asks for additional test, he must be transported to a facility and be given the opportunity to get a test (State v Reed)
  - a. If the subject claims to be indigent you must transport to a facility where they have the opportunity to get a test. Later the court will decide the indigent issue. (State v Bartells)



- b. RCW 46.61.506 states the failure or inability to obtain an additional test by a person shall not preclude the admission of evidence taken
  - c. If the person is to be released in a timely manner they may go obtain their own test
- 5. A sample blown into a defective instrument does not relieve the subject of the requirement to give a full test (2 samples) at another instrument (Sunnyside v Sanchez)
- 6. If one of the two samples required to get a printout is refused it is a refusal (DOL v Rogers, 1988)
- J. Voluntary Blood/Urine/Breath
  - 1. You may want to show a person is clear of alcohol, drugs
  - 2. Obtain a signature for a voluntary sample
- K. Breath test defined by WAC 448-13-040, State Toxicologist: Dr. Barry K. Logan
  - 1. 15 minute observation period.
    - a. To ensure that any alcohol in the person's mouth has time to dissipate before the samples are taken
    - b. The person does not have any foreign substances in the mouth. Such determination shall be made by either an examination of the mouth **or** a denial by the person that he/she has any foreign substances in the mouth
    - c. Upon checking the person's mouth for foreign objects before starting the 15 minutes, clear the person's mouth of all objects except dental work, and if necessary have the person rinse their mouth. (i.e., chewing tobacco, etc.)
    - d. If the person puts anything into their mouth, smokes, or vomits the mouth must be rechecked and the 15 minutes started over
    - e. The mouthpiece and the subject's own blood are not foreign
    - f. Tongue Jewelry: ask the subject to remove, if unable or unwilling then request a blood sample under the implied consent (other physical limitation language)

- g. Vomiting or regurgitation may bring alcohol back up to the mouth and may require a new 15 minutes and instructions not to do it or you will be refused
  - h. Observe the subject until the last sample is completed
- 2. The simulator temperature was (**34° C +/- .2 °C**)
  - a. The solution in the simulator obeys Henry's Law
  - b. At any other temperature the instrument cannot run a valid simulator test on itself and the test results are not admissible
  - c. The solution was prepared by the State Toxicology Lab
- 3. Two valid breath samples are required
- 4. The test results will be provided in the form of a printout
- 5. The results will indicate the grams of alcohol/210 liters of breath

#### IV. DUI ARREST REPORT

##### A. Constitutional Rights

- 1. Read it to a person acting unconscious
- 2. Must get translator for non-English/deaf speaking person. Spanish form available. Spanish tapes from court translator

##### B. Implied Consent Warning for Breath (Adult, Minor, Commercial)

- 1. Officer signs on "Officer's Signature" line
- 2. Have defendant sign or you can write 'refused to sign'
- 3. Have defendant mark the YES/NO box

##### C. Implied Consent Warning for Blood.

- 1. Blood is the only legally acceptable alternative when breath is impractical.

2. Emergency medical vehicle, ambulance added to hospital, clinic for blood drawing
3. When the person is incapable of providing a breath sample or you have probable cause the person is under the influence of drugs
4. When person has interferant test give one more test and if interferant again, Invoke Implied Consent for Blood (other physical limitation language). There will not be a printed document with an interferant test, not a valid test
5. Ask hospital if there is a state certified and maintained instrument in the hospital. Instructors may teach that there are no state certified DataMasters in local hospitals for evidential breath testing. Check box located at bottom of Implied Consent for Blood form
6. Read it to a supposedly unconscious person, if really unconscious use the special evidence warning

D. Special Evidence Warning

1. Four times when blood can be taken without consent. If in doubt who is driving, take blood from all suspects
  - a. Vehicular Homicide
  - b. Vehicular Assault
  - c. Unconscious (DUI/ Physical Control/Minor Driver). If possibly "acting" unconscious read the form anyway
  - d. DUI from an accident with serious bodily injury to another
2. When taking blood at a hospital you must have probable cause
  - a. Observations at the scene
  - b. Information from a reliable informant
  - c. Officer at the scene
    - (1) Relay from Communications

E. Blood sample collection (State Tox. blood kit, gloves)

1. Must be drawn by a physician, registered nurse, or qualified technician

- a. Officer should try to be a witness to the drawing of the blood sample
  - (1) This may avoid the need for the nurse to be in court
  - (2) Document all critical information (information on DUI Arrest Report) and qualifications regarding person who drew blood sample
- 2. Must be placed in a grey top tube
  - a. Tubes available from State Toxicology Lab
  - b. Expiration date on tube
  - c. White powder in tube, not empty
  - d. Record evidence information on tube
  - e. Record evidence and chain of custody information on form
  - f. Use only Toxicology Lab mailing kit to mail tubes to the State Toxicology Laboratory
    - (1) Postal regulations
    - (2) Does not need to be refrigerated
    - (3) Do not touch blood, prevent disease
  - g. Hospital analysis is not approved by the State Toxicologist
    - (1) Use ONLY the State Toxicology Lab for analysis
    - (2) The State Toxicology Lab uses whole blood where many hospitals use plasma or serum analysis

F. DUI Interview

1. Statement in question form
2. First and last drink times
3. Note all answers, sayings and statements
4. Note if invokes right to silence, defense will ask about blanks on forms
5. Observations, bottom of page 2

G. Sobriety Test

1. Divided attention tests on form
  - a. Horizontal Gaze Nystagmus
  - b. One Leg Stand
  - c. Walk and Turn
  - d. Other sobriety tests may also be used
2. PBT ( Pre-arrest breath test)
  - a. Must be voluntary, may be used to assist in determining probable cause and used in probable cause hearings
  - b. Does not satisfy Implied Consent for DUI, Commercial Drivers, or Minors
  - c. Operating instruction will be given later

V. THE DATAMASTER INSTRUMENT

A. The physical portion of the DataMaster breath test system includes the instrument, simulator, plastic mouthpieces and evidence documents

1. The DataMaster instrument
  - a. Metal case, 8"x 24"x 15" ap., 45 lbs
  - b. Power cord

- (1) Moving the instrument may pull the cord out. Call a technician before moving
- c. On-Off switch
  - (1) Always leave the instrument on
  - (2) If you need to turn the instrument off, call a technician first
- d. Display
  - (1) Liquid crystal display, with ready light
  - (2) Time displayed
- e. RFI antenna
  - (1) To detect any radio transmission and abort test if necessary
- f. Breath tube
  - (1) Heated, warm/hot to the touch, to eliminate condensation
  - (2) Must be erect/forward to avoid recirculating purged air
  - (3) There should never be a mouthpiece in the breath tube except when a sample is being taken
- g. Printer ports
  - (1) Evidence document is drawn into the printer at the beginning of a test and remains there until the end, when it is printed and ejected
  - (2) Do not remove document once it is taken into the printer. If it is not used it will remain for the next test
  - (3) The evidence document has three copies
    - (a) court
    - (b) officer
    - (c) defendant

- h. Keyboard
    - (1) Top row of keys are locked out to operators except the RUN button. If a top key is hit prior to hitting RUN and 'Password' appears, hit enter to clear.
  - i. Phone cord outlet
    - (1) Transmits data to the host computer at the Breath Test Section in Seattle
2. Simulator
- a. It is used to check the accuracy of the DataMaster.
  - b. It has a motor, thermometer, paddle attached to a jar containing a known solution prepared by the State Toxicology Laboratory
  - c. The thermometer shows the temperature of the solution, it must be **34° C +/- .2°C**
    - (1) Each graduation equals 1/10th degree C
    - (2) Be able to draw a simple picture of the thermometer for court
    - (3) The paddle inside the jar keeps the solution at an even temperature
  - d. On-Off switch should always be on
  - e. The power lamp - amber - shows the simulator is on
  - f. The heater lamp - red - shows the heater is on
  - g. The plastic tubing delivers the sample to the instrument during the external standard phase
  - h. If the tubing is kinked it can cause a low standard reading
  - i. The solution batch number is displayed on the simulator/jar
3. Plastic mouthpieces with moisture baffles are used to take samples

- a. Use the plastic bag to handle the mouthpiece and prevent disease
- b. Open the bag carefully to leave the mouthpiece ports clear
- c. Discard the mouthpiece and bag immediately after the breath sample
- d. Use a new mouthpiece for each sample

## VI. PRINCIPLES OF OPERATION

- A. An accurate and reliable breath test requires a good instrument, program and protocol
- B. The following are required for an accurate and reliable test.
  1. An accepted method of analysis
  2. An instrument in proper working order
  3. A properly calibrated instrument
  4. A deep lung sample of breath from a living human being
  5. A procedure for conducting the test that protects against electrical or mechanical conditions that introduce uncertainty
  6. An analysis of the test results to show that they are certified and reliable
- C. The DataMaster uses infrared spectroscopy, an accepted method of analysis
  1. Beers Law says that the concentration of ethanol in a sample is proportional to the infrared light absorbed by the sample
    - a. It measures the infrared light transmitted through an empty sample chamber
    - b. Measures infrared light transmitted through the sample
    - c. The difference is used to calculate the concentration of ethyl alcohol in the chamber
  2. In the light path, filters are used to distinguish alcohol and acetone



3. Over 100 substances on human breath absorb infrared light as ethanol does, but all of them combined on a healthy human breath would not effect the DataMaster result
  - a. Acetone can be on human breath (particularly diabetics) and effect the reading, so the DataMaster detects acetone as an interfering substance
    - (1) Interfering Substance  $\geq .010$  will abort the test
- D. When the 'RUN' button is pushed the instrument is checked internally
  1. If there has been a change of any kind, a message will appear on the display and the DataMaster will not proceed with a test
    - a. Ram Error
    - b. Temperature High
    - c. Temperature Low
    - d. Fatal Systems Error
    - e. Pump Error
- E. The DataMaster checks its calibration during each test
  1. Calibration is checked with an internal standard
    - a. Quartz Plate
    - b. During each test the value of the Quartz Plate is checked against its value at the time at which the instrument was calibrated
    - c. If Calibration Error appears the test aborts
  2. Accuracy is checked using a vapor sample from a simulator containing a known external standard solution
    - a. Results are displayed during the external standard phase
    - b. Results must be .072 to .088 inclusive
    - c. If the results are not within the required values, the test will abort

### 3. Sample Control

- a. A proper 15 minute observation period
- b. The most accurate and reliable sample is one of deep lung or alveolar air
- c. The best sample is a product of time and flow rate
- d. A long sample with moderate flow is better than a short, hard blown sample
- e. When sampling requirements have been met the sample can be accepted
  - (1) At least 5 seconds of acceptable sample flow
  - (2) At least 1.5 liters breath
  - (3) Minimum slope to BrAC curve
- f. When the alcohol concentration of the sample has peaked then sharply declines during the blow the display reads 'Invalid Sample'
  - (1) The test stops and all data is lost
  - (2) Invalid Sample is recorded in the database
  - (3) The operator must assume mouth alcohol and begin a new 15 minute observation, then run the test again
  - (4) Sucking or stop-start blowing may cause "Invalid Sample"
- g. Good samples can be achieved by instructing the person and by coaching during the blow
  - (1) "Blow steadily into the mouthpiece 10 to 15 seconds, I will tell you when to stop."
  - (2) The blow need only be strong enough to make the "Please Blow" become steady, but should be as long as possible. A sound will accompany the blow when air is traveling into and thru the chamber.

- F. Blank tests are run before and after any sample introduced into the sample chamber.
1. Blank tests ensure that the sample chamber has been completely purged of the previous sample
  2. If any blank test results are other than .000, the display reads "Ambient Fail " or "System Won't Zero"
    - a. The test will abort. Start test over and use previous data
    - b. This does not mean that the instrument is broken
    - c. Some condition exists that prevents a complete purge of the sample chamber.
      - (1) Solvents; hand cleaner, fingerprint ink
      - (2) Person's clothes soaked in alcohol
      - (3) A mouthpiece left in the breath tube during purge
      - (4) The breath tube not erect/forward
      - (5) Person standing next to breath tube during purge
      - (6) Mechanical or electrical problems
      - (7) Poor room ventilation
      - (8) Electromagnetic interference
        - (a) The instrument design and protocol prevent it from affecting the test results
        - (b) Metal instrument case
        - (c) Effective ground
        - (d) Separate circuit boards
        - (e) WAC requirement that the two samples be within 10% of their average

- (f) Radio frequency detector
    - i) Detects radio waves transmitted nearby
    - ii) The test stops, must start over, use previous data
- G. The DataMaster test results are analyzed to show that they are consistent with a certified and reliable test result
  - 1. The two sample results must be within 10% of their average
    - a. Add the sample results and divide by two for the average
    - b. Multiply the average by .9 to get the lower limit
    - c. Multiply the average by 1.1 to get the upper limit
  - 2. Most differences in sample results is due to sample differences, not instrument differences
    - a. Breathing patterns
    - b. Length of the sample blown
    - c. Consistent instruction and coaching will result in smaller differences between sample results. Over 50% of 2 digit samples are the same. 98% meet the  $\pm 10\%$  off the average rule required by the WAC's
    - d. The 10% of the average rule protects against
      - (1) Mouth alcohol
        - (a) Raw alcohol in the mouth dissipates rapidly
        - (b) If raw alcohol is present in the mouth at the time the sample is taken, the two sample results will not be within 10% of their average
    - e. Electromagnetic radiation
      - (1) Radiation would have to strike only the sample analysis

- (2) It would have to strike at both samples in exactly the same way

f. Instrument precision

- (1) Precision is the ability to get the same results from similar samples

- H. When the test protocol has been followed and an evidence document is printed out, the operator can be assured that the test results are accurate and reliable

## VII. THE PRE TEST PERIOD

A. Check the RFI antenna

1. If there is no antenna, advise WSP radio and go to a different instrument

B. Check the breath tube

1. It should be warm/hot to the touch
2. The breath tube should be upright/forward
3. If it is cold, advise WSP radio and go to a different instrument

C. Check the simulator temperature

1. It must be **34° C +/- .2° C**
2. If the temperature is out of range..
  - a. Check to see that the simulator is turned on. If it's off, turn it on, and in 10-15 minutes recheck the temperature. If it is still not correct, call WSP radio and tag out of service
  - b. Look at the paddle to be sure it is turning. If it is not turning, advise WSP radio and go to a different instrument
3. Check that there are no kinks in the tubing

## VIII. THE OBSERVATION PERIOD

A. Read the Miranda Rights and Implied Consent

- B. Check person's mouth and begin the 15 minute observation using the DataMaster clock
  - 1. It will disappear once 'RUN' is pushed
  - 2. It may be different than your watch
- C. You must keep the person under observation while entering data, etc.
- D. Make a note if subject has odor of volatile organic compounds (e.g., paint, thinner, etc.) about his person or clothing. If noted, determine time of last exposure.

#### IX. INSTRUMENT OPERATION

- A. When 15 minutes is completed push 'RUN'
- B. Insert Ticket
  - 1. Straight, face-down, notch to the right, into the bottom slot. Colored side up.
  - 2. If a ticket is already in the DataMaster, it should not ask for a new one.
- C. Enter Data
  - 1. Be accurate
  - 2. Use back space, control X, and delete to correct errors
  - 3. You have 5 minutes to enter each data item and one minute for Y/N questions
    - a. If time expires, the display will revert to 'Ready - Push Run' and all data is lost
- D. Data Entry
  - 1. Some data for statistical database, some for evidence document
  - 2. Refer to codebook if necessary
    - a. Sim Temp **34° C +/- .2° C?**
      - (1) Look at the thermometer
      - (2) Y / N answer. N will abort the test

- b. Observation Began
  - (1) Enter the time you started your 15 minute observation
  - (2) Use the clock on the instrument
  - (3) Use 24 hour time
- c. Citation Number
  - (1) Enter the letters/numbers of the alcohol related citation. If none hit enter and continue
- d. Operator's Name (L/F/M)
  - (1) Emphasize slash between names
  - (2) 40 characters
  - (3) First character must be alpha the remaining may be alpha, slash, or hyphen
  - (4) Enter your name the way you sign a ticket
- e. Arresting Agency
  - (1) 7 characters
  - (2) First 3 may be alpha or numeric, remaining numeric
- f. Subject's Name (L/F/M)
  - (1) Emphasize slash between names
  - (2) 40 characters
  - (3) First must be alpha, remaining alpha, slash, hyphen
  - (4) Enter full name as shown on Driver's License
  - (5) Enter "test" for a sample test
- g. Subject's DOB (mm/dd/yyyy)

- (1) 8 numbers, slash automatic
  - (2) Must be valid month/day combination
  - (3) Enter (00/00/0000) for a sample test
- h. Subject's Sex (M/F)
  - (1) Must be M or F
- i. Subject's Ethnic Group
  - (1) Must be I, B, A, W, or U, only 1 character
- j. D.L. State/Number
  - (1) Two letter state or country abbreviation, the slash is automatic
  - (2) Next, the license number
  - (3) If unknown or none, enter XX for the state and press Enter/Return to continue
  - (4) For an \* hit shift key and 8
- k. County of Arrest
  - (1) the 2 digit county code
- l. Crime Arrested For
  - (1) 2 numeric characters
  - (2) 00 for practice tests
- m. Accident Involved
  - (1) Must be Y or N
- n. Drinking Location
  - (1) First character must be numeric, the second alpha, the remaining 6 numeric



- (2) Use coded drinking locations whenever possible
    - (3) Enter 00000000 for practice test
  - o. Solution Batch #
    - (1) 5 characters, numeric
    - (2) Do not transpose, on evidence document
    - (3) Enter the correct solution batch for practice tests
  - p. PBT Test Given (Y/N):
    - (1) Must be Y or N
  - q. PBT Time:
    - (1) Military Time
    - (2) Must be a time greater than 15 minutes prior to breath test
  - r. PBT Result:
    - (1) Enter three digit result
- E. Review Data? (Y/N)
  - 1. One minute to answer
  - 2. Always review if any doubt about accuracy
  - 3. Use back space and control I (moves cursor forward) to move cursor in review mode
- F. Purging
  - 1. Air is drawn through breath tube to flush chamber. If the purge is unsuccessful the display will read "AMBIENT FAIL"
    - a. Chamber vented out back of instrument
    - b. Keep breath tube upright/forward - away from vent

- c. Some Ambient Fail causes
    - (1) Mouth piece left in breath tube
    - (2) Room odor; alcohol/chemical odor (fingerprint ink, WD40)
    - (3) Subject's clothes soaked in alcohol
    - (4) Subject with very strong alcohol odor on breath near breath tube while trying to purge
  - d. Start test over, use previous data
- G. Ambient Zeroing
  - 1. Very small adjustment possible
  - 2. If large adjustment required - "SYSTEM WON'T ZERO"
    - a. "SYSTEM WON'T ZERO" does not mean that the instrument is broken - something prevented a complete purge of the sample chamber
- H. Blank Test
  - 1. Displays .000
- I. Internal Standard
  - 1. A quartz plate that checks the instrument calibration internally
  - 2. If check is unsuccessful - "CALIBRATION ERROR"
- J. SUBJECT REFUSE? (Y/N)
  - 1. A beep will sound to alert operator to respond
  - 2. One minute to select Y or N
  - 3. "Y" results in a "Refusal"
  - 4. "N" results in a request for a breath sample

K. PLEASE BLOW

1. Put mouthpiece in when "PLEASE BLOW" appears - not before
2. Take care in opening the plastic bag not to get plastic in mouthpiece ports
3. Use the plastic bag to handle the mouthpiece to prevent communication of disease
4. Instruct the subject, watch the display and coach the subject
  - a. "Blow steadily into the mouthpiece 10 - 15 seconds, I will tell you when to stop
  - b. The blow need only be strong enough to stop "PLEASE BLOW" from flashing, but should be as long as possible. A sound will accompany the blow when air is traveling into and thru the sample chamber
5. Hard blow will not be accepted
6. Stop-start blowing, or sucking will not be accepted and may cause INVALID SAMPLE
  - a. If this occurs a mouth check and a restart of the 15 minute observation period is required
7. When the sample is accepted, REMOVE the mouthpiece using the plastic bag for protection
  - a. A mouthpiece left in the breath tube restricts the flow of purge air and will result in "Ambient Fail"
8. The alcohol reading will not appear on the display, wait for the document
9. If after two minutes of "PLEASE BLOW", a sample has not been accepted, the display will read "SUBJECT REFUSE? Y/N"
  - a. "Y" response gives a "REFUSAL" document
  - b. "N" response gives an "INCOMPLETE" document
  - c. No response will give an "INCOMPLETE" document

- d. The officer must decide whether the subject is unable or unwilling to provide a proper sample and be able to articulate the cause/facts for his/her reasoning in the arrest report
    - (1) Unable - "INCOMPLETE". Use Implied Consent Warnings for Blood
    - (2) Unwilling - "REFUSAL". Be able to articulate the reasons for a refusal
  - e. Distribute these documents as you would a complete test document
- 10. If "INVALID SAMPLE" appears on display
  - a. You must assume it was caused by mouth alcohol
  - b. Check subject's mouth and wait 15 minutes - then start again, you will not be able to use previous data
  - c. "INVALID SAMPLE" will appear in the data base
  - d. "INVALID SAMPLE" does not mean that the instrument is broken - the sample offered was unacceptable
- 11. If "INTERFERENCE DETECTED" appears on the display
  - a. Try one more test
  - b. If it occurs again try to obtain a blood sample under the implied consent for blood (other physical limitation language)

L. ANALYZING

- 1. Analyzing alcohol in the breath sample

M. Purging - Ambient Zeroing - Blank Test .000

N. External Standard (the simulator solution)

- 1. Must be between 0.072 and 0.088, inclusive
- 2. If the external standard is outside the limits, the test will abort and "Simulator Out of Range" will appear on the display. You will have to put the instrument out of service and go to another location.

3. Simulator is to remain on. Do not disconnect or interfere with hoses in back of the instrument. Kinked hoses cause low external standard
- O. Analyzing
1. Analyzing alcohol in the external standard, results will be on the display
- P. Purging - Ambient Zeroing - Blank Test .000
- Q. Subject Refuse? (Y/N)
1. One minute to select Y or N
  2. "Y" results in a "Refusal"
  3. "N" results in a request for a breath sample
- R. Please blow
1. Second breath sample
  2. Put a new mouthpiece in the breath tube
  3. Instruct the subject and watch and listen
  4. Obtain sample, remove and discard mouthpiece using plastic wrapper
  5. Consistent sample desirable
  6. If "SAMPLES OUTSIDE 10%" appears on the display, the test aborts as the two samples are not within 10% of their average
    - a. Not a valid test, run the test again
    - b. Do not need to check mouth or wait an additional 15 minutes but continue to keep in direct observation
    - c. Will be in the database
- S. Analyzing - Purging - Blank Test .000
- T. Breath Test Document
1. Instrument serial number and software version near the top

2. The reading is to three digits. e.g.: .128g/210L
3. Sign it and distribute it to the court, officer, and defendant
4. Printer Error
  - a. Put the instrument out of service and go to another instrument.
    - (1) If the document is stuck in the instrument, just leave it there.
5. Insert Ticket
  - a. If the ticket is already in the instrument, gently remove and insert a new ticket
6. If ticket prints okay, but it is not in the right position ( $\frac{1}{2}$  way down, on the back, etc)
  - a. Run the test again
- U. If test result .25 g/210 L or more, wait  $\frac{1}{2}$  hour and retest. If reading increases, hospitalize subject
- V. Message Codes - a complete list with procedures to follow will be displayed at the instrument location
  1. If "DETECTOR OVERFLOW" appears on the display
    - a. It is probably an equipment problem, try one or more tests
    - b. Call WSP and tag instrument 'Out of Service'
- W. Several of the Message Codes allow the operator to press the Run Button again and then reuse the previously entered data
- X. ALCOSENSOR III PRE-ARREST BREATH TEST INSTRUMENT (PBT)
  - A. Introduction
    1. The PBT can be a very useful tool for establishing probable cause to arrest for DUI
    2. The PBT can also be useful for enforcing "minor in possession" laws

3. The PBT is not the evidential breath alcohol test under the implied consent law since it is voluntary and typically performed prior to arrest
4. Only the AlcoSensor III PBT instrument is approved in the Washington Administrative Code. If your agency uses a different PBT instrument you must contact the State Toxicology Laboratory to determine its acceptability for use.
5. Following your successful completion of this course you will be certified operators of both the DataMaster and the AlcoSensor III PBT. Refresher classes will renew your operator status with regard to both instruments.

B. Nomenclature

1. Temperature display
2. Set button
3. Read button
4. Digital display
5. Breath intake port
6. Mouthpieces (straight white and clear with saliva trap)

C. Theory of Operation

1. The instrument uses a fuel cell to detect and quantify ethyl alcohol
2. The fuel cell oxidizes the alcohol which releases electrons available for an electrical current flow that is proportional to the concentration of alcohol
3. The current flow is measured and becomes an index of alcohol concentration
4. The results are shown on a digital display

D. Steps of Operation

1. Preliminary Considerations
  - a. The PBT is usually the last test administered along the roadside

- b. After determining the subject's willingness to do the test, the question must be asked: "Have you consumed any alcohol in the last fifteen minutes?"
  - c. If subject acknowledges alcohol consumption in the last fifteen minutes then a test should not be administered unless willing to wait fifteen minutes. This may not be practical and the decision to arrest will need to be based on other information.
    - (1) The purpose of the 15 minute wait is to guard against mouth alcohol
    - (2) Might look for open containers in vehicle to corroborate subject's statement about drinking or not drinking within last 15 minutes and make a note of it
2. Check the temperature display, it should be 20-36<sup>0</sup> C
3. Push the "Set" button
4. Push and hold the "Read" button and confirm that the displayed results go down to 0.003 or less and remain there. If not, push the "Set" button again and then push and hold the "Read" button. You may have to wait a few minutes for this to be accomplished.
5. Push the "Set" button
6. Attach the mouthpiece in one of the following configurations:
  - a. Attach the clear saliva trap mouthpiece to the straight tube white mouthpiece. Next, attach the straight white mouthpiece to the breath intake port. Have the clear saliva trap mouthpiece facing to the opposite side of the instrument display.
  - b. Attach the straight white mouthpiece with one-way valve in the proper direction so that the breath will flow in the proper direction. Reversing the direction will mean that the subject will not be able to exhale into the mouthpiece.
  - c. Demonstrate these configurations to the students.
  - d. Use plastic bags when handling (attaching, removing and disposing of) mouthpieces.



7. Have subject blow at least a 5 second sample. While the subject is still blowing press and hold the "Read" button. This will obtain that last sample of breath. Keep subject at a safe distance and remember officer safety issues. Monitor flow with back of hand to ensure subject does not suck back (this will not be necessary if using a mouthpiece with a one-way valve).
8. Keep the "Read" button depressed and observe the displayed result until the peak value is obtained. This may take up to 45 seconds or longer. This is very important to obtain an accurate result.
9. Record the results to three decimal places in your case report.
10. Note also in your case report the serial number or the state tag number of the PBT instrument.
11. Remove and discard the clear saliva trap mouthpiece or the white mouthpiece with one-way valve using the plastic bag to handle. The white tube mouthpiece (without one-way valve) can be reused but should be discarded after approximately ten tests or when becoming saturated with moisture or debris after multiple tests.
12. Press the "Set" button and LEAVE in this position until next use.

E. Additional Considerations

1. It may take up to five minutes to zero between tests on the PBT. The manufacturer recommends no more than five tests per hour when results are near 0.10. If many low tests (near zero results) are run in a row, over five tests per hour is acceptable.
2. If the PBT displays "888" this means the battery is low. Contact your local PBT Technician for a battery replacement. The battery can last up to 500 tests.
3. The PBT should be stored where it will not encounter extreme heat or cold.
4. Radios should not be transmitted near the PBT when in operation. These signals may bias the test results. Watch for the continuous smooth rise in the results.
5. The PBT instruments must be tested at least every 6 months by a responsible technician. It is very important that you provide your instrument to the technician so this can be done and records kept. This will be important if your results are to be admissible in a probable cause hearing.

The instruments can be checked more frequently by the technician and you may want to have this done following a significant arrest where the PBT will be critical evidence. The Technician will use a gas standard.

6. Generally, the PBT test results alone should not be the sole basis for the decision to arrest. However, there may be the circumstance (e.g., accident) where it is the sole basis for probable cause.
7. A negative PBT test result can help add to the probable cause to believe that the subject is on some other drug and a Drug Recognition Expert (DRE) should be called.
8. Do not allow any samples to be provided by an individual who has been smoking within three minutes. Smoke will ruin the fuel cell costing nearly \$250. When properly used, the fuel cell should last up to 3000 tests.
9. The most common problems encountered with PBT use are:
  - a. Allowing someone to smoke and then blow into the PBT within 3 minutes
  - b. Breaking off the mouthpiece tip on top of the instrument
  - c. Leaving the PBT on the vehicle and then driving off and losing or driving over it
  - d. Failing to keep the READ button depressed long enough to obtain a peak value
  - e. Not obtaining a deep lung sample
10. There are three questions related to the PBT that must be answered on the DataMaster
  - a. PBT TEST GIVEN? (Y/N):
    - (1) If "N", the next two questions will not appear
    - (2) If "Y", then
      - (a) PBT TIME:
        - i) Use military time

(b) PBT RESULT:

- i) The decimal is automatic, report to three digits

F. Practical Tests

1. Set up simulators for doing the PBT practical tests.
2. Have either the student or a partner provide samples using the simulators.
3. When using simulators, have student hold PBT on side or upside down to keep water from entering the fuel cell. Demonstrate this to students.

XI. CASE REPORTS

A. Clear, thorough and complete case reports are very important

1. Case can stand alone on the case report
2. Substantiating evidence such as driving, physical test, observations, statements, should make your case prior to even administering the breath test
3. Be sure to include all information DOL needs for a hearing so you do not have to appear for their civil hearing
  - a. Any question about your case that is not answered in your report leaves the defense an opportunity

XII. REVIEW

A. Court Testimony

1. Primary evidence is your good case report
2. The DataMaster uses infrared energy to analyze the samples
3. The breath tube should be warm-hot to the touch
4. The RFI antenna was/was not in place
5. Simulator temperature was **34° C +/- .2 C°**
  - a. Be able to draw thermometer

- b. Be able to say the paddle was turning
- 6. 15 minute observation
- 7. Followed the directions on the display
- 8. External Standard was 0.072 - 0.088 inclusive
- 9. Signed breath test document
- 10. Current defense tactics
- 11. When asked in court what you were taught in Basic: The sixteen hour DataMaster Operator and PBT Course consists of a lecture, a practice session, a written exam, and a practical exam. The course covers legal aspects of breath testing, the theories upon which the DataMaster and PBT operate and detailed instruction in how to operate the DataMaster and PBT instruments

XIII. WRITTEN AND PRACTICAL EXAM

- A. 80% to pass on written
- B. Pass/Fail practical.

06/01/2000